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A CORRECTION.

The reference to Doctor Fraser's work on beriberi on page 922 of the Public Health Reports of July 1 should have read Medical Record, April 30, 1910, page 762, instead of New York Medical Journal. The account of Doctor Fraser's paper appeared in the report of the meeting of the Far Eastern Association of Tropical Medicine in the Medical Record.

NOTES ON AGENTS USED FOR FLEA DESTRUCTION.

By MAURICE B. MITZMAIN, M. S., Assistant, Plague Laboratory, Public Health and Marine-Hospital Service, San Francisco, Cal.

This report is essentially a preliminary one based on a study of a few of the common germicides, some insecticides, and several other substances. No effort was made to test exhaustively any one of the agents used, and the study was conducted from the standpoint of the biological interest rather than that of the economical.

The investigation was undertaken primarily for the purpose of determining the efficiency of the solutions used in the laboratory for dipping rodents sent in for examination. The main object of the dipping is the killing of fleas and other ectoparasites that are found on the rodents. Lack of time has prevented a thorough investigation of the field, but such results as we have obtained are set forth here.

In the early part of the plague campaign, various agents were utilized for the purpose of destroying parasites on rodents. Mercuric chloride in the strength ordinarily used for disinfection—that is, 1 part to 1,000 of water—was extensively employed; 5 per cent carbolic acid was also used.

MODE IN WHICH INSECTS ARE DESTROYED.

For the purpose of the present work, we may say that insects are killed by the agents under discussion in one of the three following ways:

(a) *Chemical agents*.—A corroding of the tissue due to chemical action.
(b) *Physical agents*.—The stoppage of the spiracles, causing suffocation.

(c) *Physiological agents*.—The effects on the nervous system, such as are produced by chloroform and ether. These latter agents will not be discussed in detail in this paper, except to state that it is well known that both of them very promptly affect these insects. Paralysis is evident after a short time, and if the anesthetic is continued long enough the insect is killed.

We have found in the case of rats, squirrels, and guinea pigs that the fleas do not recover from the effects of an anesthetic (ether or chloroform) synchronously with the host, and in many instances fleas recover from the administration of ether or chloroform when the